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Received March 1990

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NUTTIN'S AFFECTIVE SELFPARTICLES HYPOTHESIS AND THE NAME LETTER EFFECT: A REVIEW

Vera HOORENS
Laboratorium voor Experimentele Sociale Psychologie
Katholieke Universiteit Leuven
Aspirant N.F.W.O.

The original studies on the name letter effect (NLE)—an enhanced attractiveness of the letters occurring in one's own name (NLs) as compared to the attractiveness the same letters would have being not-own name letters (NNLs) (Nuttin, 1985, 1987)—are reviewed in the context of J.M. Nuttin (Jr.)'s original research interest—the affective selfparticles hypothesis or the affective consequences of mere belongingness to the self for isolated stimulus elements. The broad implications of the NLE are briefly discussed. A series of studies is reviewed, designed to compare two alternative explanations (the primacy of mastery of NLs (own name letters) hypothesis and the subjective familiarity hypothesis) with Nuttin's affective selfparticles hypothesis. Finally, the implications of the NLE are reconsidered in the light of new research data.

Some years ago, J.M. Nuttin (Jr.) quasi-experimentally tested his affective selfparticles hypothesis (also called the elementary self-attachment hypothesis or the mere ownership hypothesis), stating that mere ownership or belongingness to self is a sufficient condition for the enhancement of the attractiveness of the isolated elements of the own(ed) object. Due to a hypothesized pervasive attachment to self, objects belonging to the beloved self as well as the constitutive parts of these objects are submitted to grow more attractive to their owners than not-own objects and their particles.

Nuttin indeed demonstrated that subjects judged the letters occurring in their own name (own name letters or NLs) more attractive as compared to the evaluation of the same letters by subjects for whom they were not-own name letters (NNLs). This enhanced attractiveness of NLs can even manifest itself independently from any conscious own name associations. This name letter effect (NLE) is presented by Nuttin as the first experimental demonstration of the affective impact of an object's (e.g., a name's) mere belongingness to self upon the attractiveness of its isolated elements or particles (e.g., NLs). If Nuttin's interpretation is correct, then the NLE provides a demonstration of a thus far unidentified and even unexpected determinant of affective preferences. Moreover, it carries some potentially far-reaching implications for research on, among other topics, the affect-cognition relationship and the self-schema or self-concept as an affective-cognitive structure.

However, while eliminating several artefactual interpretations of the NLE, Nuttin did not systematically study alternative explanations to his affective selfparticles hypothesis. In other words, although it was clearly shown that people do prefer NLs, Nuttin's first studies did not unequivocally establish the validity of his interpretation in terms of the affective consequences of mere ownership. Therefore, the present paper offers a review of recent and ongoing studies designed to further pin down the determinants of the NLE. In a first paragraph, Nuttin's earliest studies on the NLE are introduced against the background of his original research interest. The empirical, theoretical and heuristical implications of the phenomenon are briefly explained and some unresolved questions and alternative interpretations are pointed out. A series of studies is then briefly presented, designed to solve these problems. Finally, the implications of the NLE are reconsidered in the light of new data.

Affective consequences of mere ownership and the NLE

Is mine better than yours?

Several years ago, Nuttin's research interest in altruism and self-attachment gradually focussed on the potential effects of "mere belongingness to self" or "mere ownership" of complex stimuli upon the attractiveness of isolated elements (Nuttin, 1984). Can the mere circumstance that an object in one or another way belongs to self *per se* lead to an increased liking of the constitutive stimulus elements of that very object ?

It goes without saying that most people do like their own objects such as their own children, opinions, pets, material properties (e.g., their old blue bike), and that the attractiveness of an "own" object is mediated by a multitude of factors such as invested effort, freedom of choice, repeated exposure, social approval, specific costs and benefits associated with ownership, etc. Therefore, an unequivocal test of Nuttin's affective selfparticles hypothesis requires a design in which these ownership-associated variables are rigourously controlled. This goal can be reached by studying the attractiveness of a class of experimental "own" and "not-own" objects which meet at least four criteria (Nuttin, 1987). In the first place, different items should belong to different subjects, so that it is possible to assess a preference for own objects as compared to the objects belonging to others. Secondly, the overall

utility of all items of the class of experimental objects should be equivalent across subjects. This way, systematic preference patterns can unequivocally be ascribed to their ownership characteristics. In the third place, ownership of the objects should not differentially affect the behaviour of owners versus not-owners, except for the hypothesized enhanced liking of the owned object. Finally (and in the fourth place), in order to test the attractiveness of own versus not-own objects outside subjects' conscious awareness of this crucial variable, it should be possible to manipulate "mere belongingness to self" independently from perceived belongingness. The importance of such an "unconscious" test of the affective consequences of mere ownership is twofold. On the one hand, it is possible that social desirability considerations would render an evaluation of obviously own and not-own objects futile. As a matter of fact, from earliest childhood on we are trained not to defect ourselves while simultaneously keeping up some degree of modesty. On the other hand, the activation of a variety of secondary ownership-related considerations is unavoidable when subjects consciously classify the experimental stimuli on a mine-not mine dimension.

Nuttin submits that all four requirements are met by using the isolated letters of the alphabet as experimental objects and by considering the letters occurring in one's own name as "belonging to the self', and letters not occurring in one's own name as "not belonging to the self'. Indeed, NLs are the constitutive elements of a salient self-attribute (the own name). Moreover, NLs 1. differ across people, 2. belong to a well-defined class of comparable objects (the letters of the alphabet), 3. carry no specific positive and/or negative consequences and have no behavioural implications for their "owners" (except maybe the hypothesized preference for NLs) and 4. are unlikely to systematically elicit conscious thoughts about one of the many contexts in which they occur (viz. the own name). Therefore, a comparison of the attractiveness of NLs versus NNLs should allow an unequivocal test of the affective selfparticles hypothesis. More specifically, according to this hypothesis NLs are expected to be more attractive to a person than NNLs simply because they are the constitutive elements of such a salient self-attribute as the own name.

An empirical test: the NLE

In his first study, Nuttin (1985, study 1) visually presented 38 primary school girls with two lists of letter pairs and asked them to

encircle the more attractive member within each pair of each list. In one list, the letter pairs always consisted of one NL of the subject and one randomly chosen NNL. The other list consisted of NL-NNL pairs of another subject, who was presented with exactly the same two stimulus lists. The number of pairs in each list was identical to the number of letters contained in the "hidden name'. Thus, two by two subjects were yoked to each other and each stimulus list was judged both by the "owner" of the hidden name and by his or her yoked partner. For each stimulus list, the proportion was compared by which NLs were preferred above NNLs by the former versus by the latter subject. The mean proportion of NLs chosen in the "own" stimulus list (by the owner of the name) was .551; while the equivalent proportion in the "partner's" list (by the yoked partner or the not-owner of the name) only reached .446. The difference between both proportions was significant, indicating an affective overevaluation of NLs.

This NLE was replicated in a second study (Nuttin, 1985, study 2) on 96 male and female university students, again using the yoked design described above. The phenomenon did not depend on factors such as the instruction set (selecting the more preferred versus the more rejected letter), the use versus the exclusion of very low-frequent NNLs (such as the "Q") or the presentation of letter pairs versus letter triads (one NL and one NNL versus one NL and two NNLs). For instance, when subjects were required to cross out the more rejected letter of each letter pair, NLs were significantly less often rejected by the owner of the name hidden in the stimulus list (.538 non-rejection proportion) than by his or her yoked partner (.373 non-rejection proportion).

It seems, then, that at least in Flemish subjects and within a yoked design, mere ownership did in fact enhance the probability of the individual letters of the Roman alphabet to be judged as the most attractive member of a letter pair or triad. In order to further test the generality of the NLE over languages and procedures, Nuttin (1987) designed a cross-lingual study following an alternative research strategy. University students of 12 different European nationalities selected their six most preferred letters out of a single visual random presentation of the complete Roman (or, for the Greek subject group, the Greek) alphabet. For each letter, the mean proportion was then calculated by which the letter was chosen among the six favourite letters by subjects for whom it was a NL versus by subjects for whom the very same letter was a NNL. A randomization test (Edgington, 1980) was then performed over letters in order to test whether the first proportion

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was significantly higher than the second one, thus indicating a preference for NLs. A significant NLE was obtained in 9 out of 12 subject groups. Overall, the average probability for a letter to be chosen among the six most preferred letters of the alfabet was .30 for NLs versus .20 for NNLs. When only considering letters of the first name this probability increased to .33 and even to .46 for own initial letters.

Again the NLE did not clearly depend on the type of instructions given to the subjects. When asked to select the six least attractive letters of the alphabet, in most subject groups NLs were less often selected than the same letters being NNLs (Nuttin, 1987). Although the NLE obtained via rejections was weaker than the NLE obtained via preferences — the size of the effect was reduced to about half of the size obtained with positively stated instructions — this difference can most easily be accounted for by Nuttin's asymmetrical letter choice effect and his mere relative low exposure hypothesis (Nuttin, 1987).

Sas (1986) observed a significant preference for first name letters in Flemish and Walloon second, fourth, and sixth graders. All groups except French-speaking second graders (where the non-significant NL-NNL difference was still in the predicted direction) showed a significant NLE for the letters of the full name. Family name letters were preferred by Flemish fourth graders and by French-speaking sixth graders. All other differences were non-significantly in the predicted direction.

My name letters, not ours

Interestingly, the NLE seems restricted to the "own" letters in the most literal sense of the word. Although the NLE was clearest for the initials of the own name, no "mere belongingness effect" was obtained with the initials of one's own country (e.g., F for France). Indeed, the different national samples did not show a preference for their own "national initials". An analogous pattern was obtained when "national car initials" (the capital letters indicating the national identity of cars) were used (Nuttin, 1987).

In a similar vein, Johnson (1986) found no preference for the letters of one's own hometown. In her studies, the same list of letter pairs was administered to all subjects. First, she rankordened all letters of the alphabet (except the low-frequent letters Q and Z) according to their frequency of occurrence. Based on this hierarchy, she split up the alphabet in triads of letters with roughly the same frequency. Finally, she listed all possible lettter pairs made up of two letters of the same triad, resulting in a stimulus list of 24 letters. As each letter pair could

consist of 2 NLs or of 2 NNLs as well as of one NL and one NNL, a proportional analysis on the NL-choice data could only bear on each subject's individual subset of NL-NNL pairs. Using both this and an alternative procedure in which the individual letters of the alphabet were rated on a 9-point scale, Johnson obtained a NLE which was especially clear for the initials of the own name but which was completely absent for the letters of one's hometown.

Finally, in a study using Nuttin's yoked design but with a very limited number (N = 24) of recently married subjects, Flaggl, Wolfmayr and Wolfsberger (1986) found a non-significant interaction between first versus family name letters, NLs versus NNLs and sex of the subjects. Women — who recently adopted their husband's family name — showed a tendency to prefer their own first name letters above NNLs, but they did not prefer their new family name letters. Men — who kept their own family name — showed a tendency of preferring both their own first name letters and their own family name letters.

Because you're mine...

From his first series of studies, Nuttin concluded that there exists a "narcissistic" or affective overevaluation of NLs. This NL-preference is not restricted to a specific research procedure or to subjects belonging to a specific linguistic community, age group or nationality. The phenomenon was indeed demonstrated within two different research designs and in subjects of different ages — from primary school children to university students —, speaking different languages — the NLE was examined and obtained in most Western-European languages — and coming from 12 different European countries. In addition, the phenomenon holds for first name letters as well as for family name letters and for non-initials as well as for initials. As discussed by Nuttin (1985, 1987), separate analyses for the different parts of one's name revealed NLE's for each of the mentioned NL-categories (see also Hoorens, 1990; Hoorens & Nuttin, 1990; Hoorens et al., 1990). Therefore, although Johnson (1986) stated that based on her results the NLE should be renamed "the initial letter effect" (ILE), there is no cogent reason to follow this suggestion.

A particularly striking aspect of Nuttin's data is the fact that NLs themselves cannot be considered real attributes of the self. They are nothing more than the constitutive elements of a self-attribute (the own name), with which they have no exclusive relationship whatsoever: NLs as well as NNLs occur in thousands of other than own-name related

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contexts. It seems very well possible, then, that merely being part of one's own name is a sufficient condition for an isolated letter, not only to carry an enhanced attractiveness, but even to become one of the most preferred items of the complete alphabet. Indeed, although the already discussed demonstrations of the NLE are based on a comparison between letter preferences of subjects for whom the letters under study are NLs on the one hand and subjects for whom the same letters are NNLs on the other hand, the experimental task in Nuttin (1987) consisted of choosing a small set of most preferred letters out of the whole set of comparable objects (the letters of the alphabet).

More generally stated, as the NLE cannot be considered an artefact, it can be interpreted as providing evidence that merely being a constitutive element of an "own" object seems to be a sufficient condition for the enhancement of the attractiveness of isolated stimuli. Or is this a too far-fetched conclusion, and should the NLE be discounted as an artefact?

The NLE an artefact? Mere exposure, stimulus complexity, and response strategies

Two types of artefacts can easily be discounted as an explanation for the NLE. In the first place, it is clear that the phenomenon cannot be due to specific visual, acoustical or frequency-related characteristics of NLs as compared to NNLs. Although factors such as visual complexity (Berlyne, 1960, 1971, 1974; Smets, 1973) and repeated mere exposure (Zajonc, 1968; Harrison, 1977; Vanbeselaere, 1983)—or Nuttin's reformulation of the latter hypothesis in terms of relative low exposure—have been shown to influence the attractiveness of a variety of stimuli, these variables were kept rigourously constant in both Nuttin's research paradigms.

Secondly, the NLE cannot be the product of conscious response strategies applied by the subjects in the absence of any "true" preference for certain letters whatsoever. In a separate study by Nuttin (1985) not a single subject succeeded in identifying the NL-NNL variable, even when promised a considerable monetary award for anyone detecting a meaningful pattern in the stimulus materials. This observation confirms the successful fulfillment of the fourth requirement mentioned above, viz. the manipulation of objective ownership unconfounded with subjective ownership. Indeed, it is unlikely that subjective ownership plays an intervening role in producing the observed preference for NLs when subjects are not even able to identify a NL-NNL pattern in the stimuli.

Taken together, there is no reason to consider the NLE an artefact produced by known determinants of (letter) preferences (such as mere exposure or mere relative low exposure) or by conscious response strategies on the side of the subjects. Of course, this is not to say that these and/or other variables can never come into play when subjects are asked to fulfill a letter preference task. The point made here is that they cannot adequately explain the NLE. It is clear, then, that it is by no means a futile endeavour to explore the broad implications of the phenomenon and to critically assess Nuttin's initial interpretation in terms of the affective consequences of mere belongingness to self.

General implications of the NLE

If Nuttin's interpretation is correct, then the NLE does not only provide the first empirical evidence for a thus far unidentified determinant of affective preferences. It also raises some important questions and implications for, among other topics, research on the self as an affective-cognitive structure, the affect-cognition relationship and part-whole associations (Nuttin, 1987; Hoorens, 1987).

During the last decade, the self has mainly been approached as a central and highly accessible memory structure, involved in the processing of self-related (and, to a certain degree, of nearly all) information (e.g., Greenwald & Pratkanis, 1984; Markus & Wurf, 1987). However, although during the last few years the affective aspects of the self-concept have received relatively little attention as compared to the abundant literature on self-referent processing in perception, memory and inference (in contrast to early conceptions of the self; for reviews see e.g., Epstein, 1973, 1980; Gergen, 1984), most theorists acknowledge that the self has a strong affective relevance as well (e.g., Breckler & Greenwald, 1986; Swallow & Kuiper, 1988). This affective dimension has mainly been studied, however, in the context of more cognitively oriented research themata. There are, for instance, the well-known studies on self-serving biases in attribution (for a review see Greenwald, 1980), on affective variables relevant for cognitive self-reference phenomena (e.g., Claeys, 1989; Ingram, Smith, Kendall & Donnell, 1987) and on the emotional consequences of factors such as cognitive complexity (e.g., Linville, 1982, 1985, 1987). According to Nuttin (1985), an important step towards a re-appraisal of the affective self as an appealing research problem in itself is set by his empirical demonstration of the fact that merely belonging to (a complex attribute of) the self is a sufficient condition for the enhancement of the attractiveness of isolated

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stimulus elements. If the NLE is to be explained by a pervasive attachment to self, infecting even the most elementary particles of the self-concept, then it might indeed be desirable and highly interesting to reconsider both the affective relevance of the self and its interplay with apparently cognitive self-related processes.

Moreover, while many theorists limit the self-concept to its consciously available aspects (Wylie, 1979; see also self-concept research based on free self-descriptions—for a review of these studies see McGuire, 1984), the NLE suggests that this might be too narrow a view. It is clear that people would not readily include parts of the alphabet, and more precisely their own isolated NLs when describing themselves or their belongings. However, some affective and/or cognitive (although not necessarily conscious) categorization or hierarchy along a mine-not mine continuum must have taken place at one or another moment in the genesis of the observed NL-preference. It seems, then, that the self can expand itself beyond the borders of conscious accessibility and that it can unconsciously influence certain affective-cognitive processses.

On a very general level, the NLE has at least a heuristical value for the ongoing debate on the affect-cognition relationship and more specifically on the question whether affective responses are possible in the absence of any conscious cognitive processing. There appears to be a dissociation indeed between affective and cognitive responses to NLs versus NNLs. As already discussed, NLs were preferred although subjects were not consciously aware of the NL-NNL variable in the stimulus materials (Nuttin, 1985). Moreover, subjects chose their NLs without being aware of their own choice pattern (Nuttin, 1984; Hoorens, 1990). This pattern of results supports the view that affective responses are possible in the absence of any conscious cognitive elaboration. As noted by Van den Bergh (1985), the strength of this demonstration lies in its full independence from any stimulus impoverishment or assumed subliminal stimulus presentation. Therefore, it is not subject to the methodological objections which have been made against certain research strategies using these techniques.

Finally, if Nuttin's interpretation of the NLE is correct, then the affective value associated with a complex stimulus (e.g., the own name) must in one or another way be elicited by its constitutive elements (e.g., NLs). This implication of the NLE raises a challenging theoretical problem. Indeed, the effect does not seem to require any contingency between each of the isolated elements and the compound stimulus. As a

matter of fact, although the own name clearly "belongs to the self" (even if a more or less limited set of other people carry the same first or family name), NLs do have no contingency whatsoever with the own name—each of the NLs is used to form thousands of other words or letter strings. Yet the enhanced attractiveness of own as compared to somebody else's name seems to "spill over" on its constitutive letters. The animal literature on compound stimulus learning (for a review see Rescorla, 1981) does not seem to offer a fruitful approach to render this observation less challenging. Indeed, although in animals the isolated elements of compound conditional stimuli have been shown to elicit an affective response similar to the response associated with the compound, an effective procedure to definitively extinguish such compound-element associations consists in presenting the element in different contexts (Rescorla & Freberg, 1978). However, as compared to NNLs, NLs do carry an enhanced attractiveness despite the absence of any exclusive contingency with one's own name. On the contrary, there are some letters which occur in words used so frequently in everyday language (like "e", which occurs in the highly frequent word "the") that if they could be assumed to show any contingency with any word, it certainly would not be somebody's name.

However challenging, it is clear that the validity of the implications presented above does not only depend on the non-artefactual character of the NLE in itself, but also on the validity of its interpretation as a demonstration of mere belongingness to the self as a sufficient condition for the enhancement of the attractiveness of isolated stimulus elements. Therefore, a series of studies was designed in order to test some alternative interpretations of the NLE.

Alternative views on the NLE: Theoretical considerations and empirical tests

Notwithstanding the elimination of a variety of artefacts, a close examination of the NLE and its theoretical interpretation reveals four main problems prohibiting an unequivocal acceptance of Nuttin's affective selfparticles hypothesis. First, in all studies discussed thus far, only European subjects and (except for Finnish and Hungarian) languages belonging to the Indo-European linguistic family were used. In the Hungarian sample, the NLE was significant only for initials. Therefore, although the NLE has been demonstrated in a large number of nationalities and languages, a certain linguistic and/or cultural

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specificity cannot be excluded. Such a specificity would call for a much more limited explanation of the phenomenon than Nuttin's "attachment to self" or "mere ownership".

Secondly, despite Nuttin's elimination of several artefacts the NL-NNL variable might still have been confounded with another factor which was called "primacy of mastery of NLs". In general, NLs are the very first items children learn to read and write (Hoorens, 1990; Hoorens & Todorova, 1988). This achievement is hypothesized to be accompanied by such an intense positive "mastery" affect, that the isolated letters associated with it remain preferred throughout the following years. If primacy of mastery of NLs offers a sufficient explanation for the NLE, then there is no reason to assume an intrinsic relationship between the NLE and the self. As a matter of fact, if primacy of mastery of NLs would present an adequate explanation for the NLE, and if children typically would first learn to read and write the name of a national hero, political or religious leader, it would be unwarranted to explain any resulting "leader name letter effect" by referring to the affective consequences of "mere belongingness to the leader" concepts.

Thirdly, even if we are to accept that the NLE is an intrinsically self-related phenomenon, the studies presented thus far do not contain any compelling evidence for an interpretation in terms of mere belongingness to self. Indeed, although objective frequency differences are kept constant in Nuttin's research procedures, it is very well possible that NLs seem more familiar than NNLs, causing a subjective exposure phenomenon that enhances their attractiveness. Such an overestimation could be a consequence of the cognitive properties of the self-structure. If this "subjective familiarity" hypothesis is correct, further research on the NLE should focuss on the unraveling of the cognitive processes causing a NL-frequency overestimation rather than on mere ownership or mere belongingness to self.

In the fourth place, and closely related to the former points, the studies discussed thus far do not present any independent and positive evidence in support of Nuttin's affective selfparticles explanation of the NLE. Although the NLE itself was demonstrated as an attempt to empirically test the affective selfparticles hypothesis, it should be clear from the paragraphs above that the phenomenon can also be explained alternatively. Therefore, a direct evaluation of the link between the NLE and concepts such as mere ownership and self-attachment should be the natural complement of studies eliminating alternative hypotheses.

The next paragraphs are devoted to a review of a series of studies designed to solve these four problems. First, we will review the evidence concerning the primacy of mastery of NLs hypothesis. In the second place, the subjective familiarity hypothesis will be addressed. Finally, the next section deals with studies aimed at a direct evaluation of Nuttin's affective selfparticles hypothesis. Besides Nuttin's (1987) cross-national study, no studies are known to us which are solely directed at exploring the NLE's generality. However, due to the choice of different subject populations, languages and alphabets, the studies designed to test the respective explanation for the phenomenon are highly relevant in this respect.

The NLE: Primacy of mastery of NLs?

The primacy of mastery of NLs hypothesis allows two falsifiable predictions. In the first place, a significant NLE should only be found in the very first alphabet people learn to read and write (in analogy with the notion native language, we will further call this the "native alphabet"). After mastering the essential writing skills before or during primary school, learning to write the own name in a second alphabet would not carry the same affective consequences. The subjects' pre-existing writing experience does indeed not allow for a comparable thrill or mastery experience. Moreover, the study of a new alphabet —usually at a high school or university level— is not initiated by practising the writing and reading of one's own name.

In the second place, the NLE should be strongest shortly after the crucial mastery experience has taken place. Afterwards it should gradually weaken towards a relatively stable level, as the contingency between "being a NL" and "being a letter that I can write" fades out with increasing writing practice. More specifically, then, the primacy of mastery of NLs hypothesis leads to expect a decreasing trend in the NLE over primary school grades.

These predictions are in contrast with implications from Nuttin's affective selfparticles hypothesis. If this hypothesis is correct, people should show a NLE both in their native alphabet and in an other alphabet they learn at a later age. Moreover, if obtained, both effects should be positively correlated as reliable interindividual differences in self-attachment can be expected to manifest themselves over different measures. Finally, if the NLE depends on a mere belongingness to self process, there is no reason to expect a decreasing effect over primary school grades (as predicted by the primacy of mastery of NLs).

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In two studies the cross-alphabetical stability of the NLE was tested. Hoorens & Todorova (1988) presented Bulgarian students with a letter preference task designed after Nuttin's cross-national research (1987). All subjects chose their six most preferred letters out of the Cyrillic alphabet (native alphabet) as well as the Roman alphabet, with which they only became acquainted during Western language courses at high school (second alphabet). After filling out the letter preference tasks (presentation order being counterbalanced), subjects wrote down their full name both in Cyrillic and in Roman letters. The data were analyzed in the same way as in Nuttin (1987).

Although the NLE was significantly stronger in Cyrillic, both alphabets yielded a significant NL-preference. For NLs, the overall probability of being chosen among the six most preferred letters of the Cyrillic, resp. the Roman alphabet was .34, resp .31. For NNLs the comparable probabilities were .18, resp. .21. Moreover, both NLEs were significantly correlated ($r = .45$; $df = 98$; $p < .0001$). Subjects showing a relatively strong preference for NLs in the Cyrillic alphabet also selected more NLs in the Roman alphabet than subjects showing a weak Cyrillic NLE. A more detailed analysis showed that this correlation was not especially situated in the subset of letters common to both alphabets. Taken together, these results contradict the primacy of mastery of NLs hypothesis while supporting the affective selfparticles hypothesis.

Notwithstanding this conclusion, the weaker NLE in a second as compared to one's native alphabet could indicate that primacy of mastery of NLs, while not being a necessary condition, has some importance as a determinant of the NLE (We will further call this the "mitigated primacy of mastery of NLs" hypothesis). Another possibility, fitting better in an affective self-particles explanation, could be that the own name written in a foreign alphabet does not become such an integrated part of the self as it is in one's native alphabet.

In order to disentangle these alternative interpretations, it did seem appropriate to compare the NLE of subjects having studied a second alphabet simultaneously with their native alphabet, with the NLE of subjects who first became thoroughly acquainted with their native alphabet before studying a second alphabet later on. If the difference between the NLE in the native and the second alphabet is to be explained by a somewhat mitigated primacy of mastery of NLs hypothesis, then it should only appear in the latter group. If it depends rather on a differential integration in the self, then it should be present in both subject groups.

A test of these predictions is made possible by the double Thai educational system. In Thai private schools, the Thai and the Roman alphabet are taught simultaneously from the very first grades on. In state schools, however, Western languages and the Roman alphabet are not studied until after some years of Thai education—namely between the fourth and the sixth grade. Therefore, a second cross-alphabetical study was designed in which 223 Thai university students chose their six most preferred letters out of both a random presentation of all Thai consonants[1] and a random presentation of the complete Roman alphabet (Nuttin & Hoorens, 1988; Hoorens et al., in press, study 3). Again, presentation order of the two alphabets was counterbalanced. After performing the letter preference tasks and after writing down their full name both in Thai and in Roman letters, subjects indicated in which school they had received their primary education. The latter information was then coded by a Thai doctoral student so that subjects could be classified as belonging to the "private school" condition versus the "state school" condition.

Although NLs were significantly more often preferred in the subjects' native (Thai) alphabet than in their second (Roman) alphabet, significant and intercorrelated NLEs were obtained in both alphabets. These results, replicating the Bulgarian study of Hoorens & Todorova (1988), contradict a prediction from the primacy of mastery of NLs hypothesis while confirming predictions from Nuttin's affective selfparticles hypothesis. In contrast with a prediction from the mitigated primacy of mastery of NLs hypothesis, the Roman NLE did not depend on the existence of a time lag between the study of one's native and one's second alphabet. Irrespective of our subjects' primary school education, NLs were more strongly preferred above NNLs in one's native alphabet. Therefore, even the mitigated primacy of mastery of NLs hypothesis receives no empirical support.

It will be remembered that besides a NLE restricted to the first alphabet ever learned, the primacy of mastery of NLs hypothesis also predicts a decreasing NLE over primary school grades. This prediction was tested in two cross-sectional studies (Nuttin & Hoorens, 1988; Hoorens et al., 1990, studies 1 and 2). Flemish and Hungarian second,

[1] Although the Thai alphabet consists of three types of characters—vowels, accents and consonants—only the last type can be presented in isolation. Not only must a vowel always be accompanied by a consonant to be meaningful, but the same character can denote different vowels depending on its place written above, under, to the left or to the right of a consonant or another vowel—and some vowels are not written at all.

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fourth and sixth graders selected their six most preferred letters out of a single visual random presentation of all the letters of the alphabet. Again, the data were analysed as in Nuttin (1987). Significant NLEs were obtained at all grade levels. Depending on the age level and the alphabet — the stimuli presented to the Hungarian samples included some typically Hungarian letter-letter and letter-diacritical sign combinations — the overall probability for a NL to be chosen among the most preferred letters ranged from .22 to .42; whereas the analogous probability for a NNL varied from .09 to .18. More important, however, in both studies a significant increase over grade levels was also obtained, with the major increase between the 2nd and the 4th grade. It seems, then, that the results do not only fail to provide evidence for a decrease of the NLE over grade levels, but that they even yield an opposite pattern.

The two predictions derived from the primacy of mastery of NLs hypothesis as well as the prediction from the mitigated primacy of mastery of NLs hypothesis were tested in a letter preference study on Thai primary school children (Hoorens et al., 1990, study 4). By integrating the cross-alphabetical and cross-sectional research strategies, this study also allowed to resolve a problem inherent in both designs. Indeed, the studies discussed above did not allow a stringent check of the validity of the native versus second alphabet and, for the Thai cross-alphabetical study, of the schools variable as an operationalization of the time of acquisition of the alphabets under study. It is possible, for instance, that outside the school context the second alphabet is practised simultaneously with one's native alphabet. In this case the time interval between the acquisition of both alphabets at school would of course become irrelevant. An analogous reasoning can be presented for the difference between state school and private school children.

Therefore, Thai children of the second, fourth and sixth grade of a state school and a private school selected their six most preferred letters out of a visual random presentation of all Thai consonants and all Roman capitals. From the second grade on, both private and state school children did indeed show a preference for Thai NLs above Thai NNLs (probability of being chosen among the most preferred letters ranged from .22 to .29 for NLs and from .12 to .14 for NNLs). However, state school second and fourth graders did not show any trace of a Roman NLE, while private school children started to prefer Roman NLs—at least letters of the first name—from the fourth grade

on. Both private and state school sixth graders showed a significant Roman NLE.

This pattern of results is in line with the assumption that state school second and fourth graders do not know the Roman alphabet, implying that they can not be expected to affectively discriminate between NLs and NNLs, whereas private school children are familiar with Roman letters, allowing them to show a Roman NLE. Taking into account the relatively small Thai NLE in the youngest subject groups (overall NL-NNL choice difference less than .08) — replicating Hoorens et al. (1990, studies 1 and 2) — the absence of a Roman NLE in private school second graders and the weak effect in private school fourth graders is not surprising. Hoorens & Todorova (1988) and Hoorens et al. (1990, study 3) indeed showed a weaker NLE in a second alphabet as compared to one's native alphabet. Therefore, as private school second graders already showed a weak Thai NLE, a clear Roman NLE could hardly be expected.

Replicating Hoorens et al. (1990), studies 1 and 2) fourth and sixth graders selected significantly more NLs among their six most preferred Thai consonants than second graders. Together with the significant NLE in the Roman (second) alphabet, these results are in contradiction with both predictions from the primacy of mastery of NLs hypothesis. Contrary to a prediction derived from the mitigated primacy of mastery of NLs hypothesis, no schools by alphabet interaction was obtained. Indeed, independently from their primary school, subjects chose more NLs in the Thai consonantal alphabet than in the Roman alphabet.

In contrast, the results partially fulfil the expectations based on Nuttin's affective selfparticles hypothesis. A NLE was observed in the Roman as well as in the Thai alphabet. Although only in sixth graders the Thai and the Roman NLE were correlated, this cannot be considered too surprising as only in sixth graders strong Roman NLEs did emerge. Finally, the differential strength of the NLE in a native and a second alphabet did not seem to depend on the occurrence of a time interval between the study of the two alphabets.

From all these studies it can be concluded that even a mitigated primacy of mastery of NLs process has no or only little importance as a determinant of affective NL-preferences. This conclusion is not merely based on the absence of positive evidence for the hypothesis, but rather on patterns of results which run contrary to its derived predictions.

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Subjective familiarity of NLs as a determinant of the NLE

In his original studies, Nuttin carefully avoided confounding mere ownership and mere exposure (or mere relative low exposure) by keeping all NL-NNL frequency differences rigourously constant. Using a yoked design, this goal was achieved by comparing the proportion of NLs chosen in exactly the same letter pairs by the "owner" versus by a yoked "not-owner" of the hidden name. In Nuttin's cross-national study (and in the cross-alphabetical and cross-sectional studies reported here), the proportion was compared by which a letter was chosen among the six most preferred letters of the alphabet by subjects for whom the letter was a NL versus by subjects for whom the very same letter was a NNL.

However, while controlling for the objective frequency of the letters as visual stimuli in a linguistic environment and thus eliminating mere repeated exposure (or relative low exposure) as an explanation for the NLE, the studies discussed thus far did not examine the influence of subjective familiarity differences. Therefore, the possibility remains that NLs are perceived to be more familiar than NNLs, causing a subjective familiarity mechanism to enhance their attractiveness. This potentially enhanced subjective frequency of NLs might be due to the high accessibility of the self-structure in memory (for reviews see Greenwald & Pratkanis, 1984; Marcus & Wurf, 1987) and to the prominent place of the own name in this self-concept (e.g., Allport, 1961; Markus & Sentis, 1982; Sherif & Cantril, 1947). For instance, NLs might catch one's conscious attention more easily or spontaneously evoke more (and more self-related) associations. The hypothetical subjective frequency bias resulting from these or other cognitive self-related processes could then lead to an enhanced attractiveness. Indeed, while mere exposure phenomena are often demonstrated in the absence of a conscious recognition or an enhanced subjective familiarity of the experimental stimuli (e.g., Matlin, 1971; Moreland & Zajonc, 1977; Kunst-Wilson & Zajonc, 1980; Seamon et al., 1984), some researchers have also found affective consequences of subjective familiarity in the absence of objective exposure differences (Matlin, 1971; Moreland & Zajonc, 1977, 1979; see, however, Seamon et al., 1983; Wilson, 1979).

If the subjective familiarity hypothesis is correct, then NLs should not only carry an enhanced attractiveness. Their relative frequency should also be overestimated. Moreover, the NL-frequency overestimation should be positively correlated with the affective NL-overevalua-

tion. These predictions were tested in three experiments (Hoorens & Nuttin, 1990).

Two studies essentially followed Nuttin's yoked design, except for the fact that repetitive NLs were presented in only one NL-NNL pair per stimulus list and that, within each list, the pairs were presented in random order. Subjects selected both the more attractive and the more frequent letter out of each letter pair of their own and their partner's stimulus list. One half of the subjects completed the preference task (for all letter pairs) first, the other half started with the frequency judgement task.

In the first study (Hoorens & Nuttin, 1990, experiment 1), exactly the same letter pairs were used in both choice tasks. A significant NLE (own versus partner's NL-choice proportion difference .09 in the preference-frequency condition and .11 in the frequency-preference condition) as well as a significant NL-frequency overestimation were obtained (own-partner's NL-choice proportion differences .10 and .11). In addition, both NL-overevaluation effects were positively correlated ($r = .35$; $df = 64$; $p < .005$).

In the second study (Hoorens & Nuttin, 1990, experiment 2), different stimulus lists were administered in the two choice tasks. Moreover, half of the subjects received parallel instructions ("positive" choices in both tasks) while the other half received opposite instructions ("positive" choices in the first task and rejections in the second task). The NLE and the NL-frequency overestimation were replicated, but not so their correlation.

As the second study avoided demand characteristics and memory effects due to the identical stimuli in both choice tasks, the conclusion seems warranted that any hypothesis on the NLE implying a correlation between the NLE and a NL-frequency overestimation, such as the subjective familiarity hypothesis, should be approached with the greatest caution. However, it is possible that the use of different NL-NNL pairs in the two choice tasks created such unfavourable conditions for the observation of any correlation, that even a truly existing relationship between both phenomena could not be observed.

Therefore, Hoorens & Nuttin (1990, experiment 3) designed a third study in which subjects rankordened all letters of the Roman alphabet both according to their frequency of occurrence and according to their attractiveness. This design allowed the presentation of exactly the same letter stimuli in both letter choice tasks while simultaneously preventing subjects from simply repeating their first responses in the second

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judgment task. It was indeed assumed that due to the large number of ranks to be assigned, memory effects would be minimalized. As predicted by the affective selfparticles hypothesis, NLs were ranked relatively high on the attractiveness hierarchy. In addition—but to a lesser degree—they were also ranked relatively high on a subjective frequency hierarchy. However, there was no significant positive correlation between the NLE and the NL-frequency overestimation.

It should be noted that in both studies using a yoked design the partner's NL-choice proportion for both the frequency and the preference task was generally higher than a chance level of .50. Over the two studies, these proportion indeed ranged from .49 to .66. Although the difference between the partners' NL-choice proportions and Nuttin's (1985) data can easily be accounted for by procedural differences between his and Hoorens & Nuttin's (1990) studies, the latter authors' data are interesting in another respect. They indeed show that applying a yoked design was an important methodological precaution in order to unequivocally demonstrate the NLE, as letters occurring in names in general (one's own name as well as other people's names) seem to be both subjectively more frequent and more liked than letters not occurring in names.

In summary, no clear evidence for the subjective familiarity hypothesis has been found. Although a significant NL-frequency overestimation was repeatedly obtained, no relationship with the NLE was found. The only study in which a significant correlation occurred was indeed subject to criticisms not applicable to the other experiments reported by Hoorens & Nuttin (1990).

A DIRECT EVALUATION OF NUTTIN'S AFFECTIVE SELFPARTICLES HYPOTHESIS

All studies discussed in the previous section of this article were designed to test two alternatives to Nuttin's affective selfparticles hypothesis as a sufficient explanation for the NLE. Since neither the primacy of mastery of NLs hypothesis nor the subjective familiarity hypothesis did receive empirical support—the primacy of mastery of NLs hypothesis was even clearly contradicted—it is tempting to conclude that only Nuttin's mere ownership mechanism remains as an acceptable explanation. This hypothesis states that NLs are more attractive than NNLs merely because NLs occur in such a salient self-attribute as the own name. More generally stated, "own" objects and their constitutive particles are assumed to grow more attractive than

"not-own" objects and their elements. However, it is obvious that this explanation would gain strength if it were also based on more direct evidence.

In the context of studies aiming at an empirical test of the primacy of mastery of NLs hypothesis, a positive correlation was obtained between the NLE in one's native alphabet and the NLE in one's second alphabet. While being in line with predictions derived from Nuttin's mere ownership hypothesis, these data do not provide a sufficient basis for accepting his explanation of the phenomenon. It should be noted indeed that the individual NLE-scores on which these correlations were based were not corrected for variations in objective letter frequencies, thus leaving the possibility of these correlations being partly or, in the worst case, completely artefactual.

If NLs are preferred merely because they are the constitutive elements of one's beloved own name, then subjects should also positively evaluate their own name as a whole. The rationale behind this prediction is that one's own name as a whole can be considered a selfparticle as well as one's own name letters. More specifically, one's own name is a particle of the complex unit of autobiographical information stored in one's memory. Moreover, names are acceptable as experimental objects as they meet most of the criteria set by Nuttin (1984, 1985) and summarized above.

In addition, subjects showing a relatively strong attachment to their own name should show a stronger NLE than subjects who evaluate their own name less positively. Indeed, if both attachment to NLs and attachment to one's own name are related to self-attachment, then subjects showing a particularly strong satisfaction with their own name should also show a strong NLE. Although both variables may also depend on a number of other factors, the circumstance that NLs are the constitutive elements of one's own name should provide a close enough link between them to allow their assumed common base to be put into evidence.

Therefore, besides asking a letter frequency and letter attractiveness hierarchy, Hoorens and Nuttin (1990, experiment 3) also assessed subjects' satisfaction with their own name, using a short questionnaire in which own name evaluation was indirectly assessed (e.g., by asking how well one's own name would be suited for somebody whom the subject greatly admires). This indirect measure was preferred above a more direct one in order to maximally reduce demand characteristics due to the fact that one's own name cannot be presented outside the subjects'

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knowledge that they are evaluating an own object. It was also hoped that a questionnaire aiming at an indirect assessment would allow potentially non-conscious aspects of own name attachment to manifest themselves. Indeed, the above discussion is not meant to say that the NLE depends on a conscious satisfaction with one's own name.

Both predictions discussed above received empirical support. In contrast, the NL-frequency overestimation did not show an analogous relationship with own name evaluation, again demonstrating the independence of the NLE and the NL-frequency overestimation and thus contradicting the subjective familiarity hypothesis.

In a thus far unreported study by Hoorens and Sedek, done in 1989 and only a few months before the Polish policital system drastically changed, Polish youngsters of different ages selected their six most preferred letters out of both their Roman native alphabet and the Cyrillic alphabet used by the Russian language. At the time of the study, in Polish secondary schools the Russian language was taught in an obligatory and therefore highly unpopular school course. Therefore, it was reasoned that the Cyrillic alphabet associated with this language would also be experienced as definitely not-own or even hostile, rendering a more subtle "own versus not-own" within-alphabet variation futile—so that contrary to the results of Hoorens & Todorova (1988) no Cyrillic NLE should be found. The data were in line with the expectations: only in the Roman alphabet a significant NLE was obtained. Although in a few analyses there were some traces of a preference for Cyrillic NLs above NNLs, this preference was only situated in the subset of letters also occurring in the Roman alphabet. It can be concluded, then, that instead of Cyrillic NLs being preferred above Cyrillic NNLs, it were the Roman NLs which were preferred above Cyrillic letters in general—both NLs and NNLs.

To summarize, both studies are in line with Nuttin's affective selfparticles hypothesis. Together with the already discussed positive correlation between the NLEs in one's native and second alphabet, these results suggest that the NLE is indeed based on self-attachment and mere belongingness to self.

The NLE revisited: conclusions and implications

As should be clear from the discussion above, a series of empirical studies showed a NLE in Finno-Ugrian and South East Asian as well as in Indo-European alphabets and subjects. The conclusion seems

warranted, then, that an affective overevaluation of NLs is a general phenomenon in all cultures where own names are consistently used (where people have a single official name, with eventually a nickname) and where the letters of one's name can unequivocally be presented in isolation.

Two alternative hypotheses to Nuttin's affective selfparticles hypothesis or mere ownership hypothesis do not receive empirical support. Although NLs were more often preferred in the subjects' native alphabet as compared to the NLE in their second alphabet, significant and intercorrelated effects were obtained in both alphabets. This pattern of results occurred irrespective of the existence of a time lag between the subjects' acquisition of both alphabets. Moreover, the NLE was shown to increase over primary school grades. While contradicting the predictions derived from both the original and the mitigated primacy of mastery of NLs hypothesis, these results do support Nuttin's interpretation of the NLE in terms of belongingness to the beloved self. Furthermore, although NLs showed an enhanced subjective frequency of occurrence in two studies, only under very restricted circumstances (identical stimulus lists in both choice tasks) the name letter frequency effect (NLF) was positively correlated with the NLE. In addition, the NLE and the NLF did not show parallel relationships with a third variable (own name satisfaction). These results are at odds with predictions derived from the subjective familiarity hypothesis.

As a conclusion, both the (original as well as mitigated) primacy of mastery of NLs hypothesis and the subjective familiarity hypothesis can be discounted. Based on the results reviewed in this paper, only Nuttin's affective selfparticles hypothesis can be maintained. In line with a prediction derived from this hypothesis, the NLE in one's native alphabet and one's preference for NLs above NNLs in one's second alphabet were positively correlated. In addition, the only instance in which a NLE was neither predicted nor observed concerned a definitely not-own alphabet. Moreover, one's own name as a whole was found to be positively valued as well. Finally, the NLE showed a significant relationship with this own name satisfaction.

It will be remembered that the validity of the NLE's broad implications was submitted to be dependent on the validity of the affective selfparticles hypothesis. Besides attaching weight to these implications, the studies reviewed in this paper allow to specificy them somewhat further. For instance, the demonstration of the NLF may clarify the link between the cognitive self-literature on the one hand and the NLE

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on the other hand. While recent self-literature focuses on the cognitive processing effects of complex self-related memory structures, the NLE is not only situated at the affective level but it also deals with isolated stimulus elements (letters) of a complex self-attribute (one's own name). The NLF demonstrates that the self-structure can be involved, not only in the processing of complex selfrelated attributes, but also in the cognitive processing of the constitutive elements (the isolated letters) of at least one such attribute (the own name), which themselves would not readily be admitted as "being a part of" or "belonging to" the self. It seems, then, that cognitive self-referent processes are possible on a very elementary stimulus level. As such the NLF builds a conceptual bridge between the affective NLE and the cognitive self-literature, rendering more straightforward the potential importance of the NLE for a fruitful and integrative self-conceptualization.

Of course, both the NLE itself and the recent studies designed to unravel its determinants evoke more questions than they have answered thus far. For instance, how can the affective value associated with a complex self-attribute (the own name) "spill over" to its constitutive elements (the NLs)? And what about the NLF? Which are the exact processes behind the overestimation of the frequency of occurrence of NLs as compared to NNLs? These and other questions on the NLE and the NLF are subject to ongoing research.

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Tiensestraat 102
3000 Leuven

Received January 1990